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Foreign Currency Loans - Demand or Supply Driven?

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Abstract

Motivated by current concerns over foreign currency exposures in emerging economies, we examine the currency denomination of business loans made in Bulgaria prior to the current crisis. We analyze information on the requested and granted currency for more than hundred thousand loans granted by one bank to sixty thousand different firms during the period 2003-2007. This unique data set allows us to disentangle demand-side from supply-side determinants of foreign currency loans. We find that the bank in our sample often grants loans in foreign currency even when a firm requests a loan in local currency. The bank lends in foreign currency, not only to less risky firms, but also when the firm requested a large or long-term loan and after the bank itself received more funding in euro. These results suggest that foreign currency borrowing in Eastern Europe is not only be driven by borrowers who try to benefit from lower interest rates but may be partly supply-driven with banks hesitant to lend long-term in local currency and eager to match the currency structure of their assets and liabilities.

Keywords: foreign currency debt, banking

JEL classification numbers: G21 G30, F34, F37

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1 Introduction

Firms in emerging markets often borrow in a foreign rather than the domestic currency. Unhedged foreign currency borrowing by the private sector is seen as a major cause of the financial crises in East Asia in the 1990's (Goldstein and Turner 2002). Currently there are strong fears that again foreign currency borrowing could jeopardize financial stability, this time in Emerging Europe. Such instability could have stark repercussions for the Western European banks which dominate lending in many of these countries.

The risks arising from foreign currency borrowing in countries like Poland, Hungary, Romania or Bulgaria are particularly worrying, as these loans are predominantly held by retail clients, i.e. households and small firms. "*The point to grasp about Eastern Europe is that … the debt is plagued by currency mismatches because in recent years households (and to a lesser extent, corporates) have increasingly chosen to borrow in low-interest currencies …it has shades of the Asian tigers back in 1997."* (Financial Times, 29/9/2007).

Existing evidence for the region examines the motivation for firms (Brown, Ongena and Yesin 2009) and households (Beer, Ongena and Peter 2008) to *choose* a loan in a foreign rather than the local currency. However, the currency denomination of loans depends not only on the firms' preferred currency, but also on the loan menu which banks *offer* to them. For example if the future value of the domestic currency is unpredictable and banks are risk-averse they may be wary of extending credit, in particular long-term credit, in the local currency (Luca and Petrova 2008). But banks' supply of foreign currency loans may also depend on their own access to foreign currency refinancing (Basso, Calvo-Gonzalez and Jurgilas 2007). Due to their foreign ownership many banks in Emerging Europe have substantial liabilities in euro. Limited by prudential regulations in their currency exposure, and limited by weakly developed forward markets in instruments to hedge foreign currency

positions, banks may lend in foreign currencies to preventing currency mismatches on their own balance sheets (Luca and Petrova 2008, Sorsa, Bakker, Duenwald, Maechler and Tiffin 2007).

In this paper we examine how the currency denomination of loans is determined in the negotiation process that takes place between small firms and one retail bank in Bulgaria. Our analysis is based on information for 105,284 business loans granted to over sixty-thousand firms during the period 2003-2007. In contrast to previous studies, we observe not only the currency as stated in the loan contract but also the borrower's requested currency. We are therefore able to examine to what extent the currency denomination of loans is determined by demand and / or supply side factors and which are the driving factors on either side.

In Bulgaria, as in other Eastern European countries, foreign currencies and especially the euro play an important role for domestic financial transactions. On average, in the region 40% of customer deposits are held in foreign currency and 52% of loans are made in foreign currencies with the euro being by far the most important currency (see e.g. ECB 2007). Bulgaria is representative of this "eurization" of the banking sector with 40% of deposits and 47% of loans denominated in euro.

The bank at the heart of our analysis is focused on retail lending making it an interesting object of study, since exactly retail clients seem to have been most involved in foreign currency transactions throughout Eastern Europe. As with the majority of banks in the region, the bank is mainly foreign owned and has therefore substantial foreign currency funding. Similar to other retail banks in Bulgaria and the Eastern European region as a whole, loans in foreign currency make up a substantial share (27%) of the bank's portfolio.

In line with theoretical predictions (see e.g. Cowan 2006), our results show that a firm in our sample is more likely to request a loan in foreign currency, (euro) compared to the local currency (Bulgarian lev) if interest rates on foreign currency loans are lower, if the firm has

foreign currency income, and if it faces lower distress costs in case of default. We also find that larger firms, older firms and less opaque firms, i.e. those with a longer relationship with the bank relationship are more likely to request a euro loan. We, however, also find that firms which need larger loans, long-term loans and loans for investment purposes are more likely to request a foreign currency loan. This result seems to be driven by firms anticipating the reluctance of the bank to extend large or long-term loans in local currency. Indeed, an analysis of panel data for repeat clients of the bank suggests that firms learn over time that larger and longer-term loans which are intended for investment purposes are more likely to be granted in foreign currency.

Turning to the bank's choice of granting foreign currency or local currency loans we find that the bank does consider a firm's currency request when deciding whether to lend in local or foreign currency. Beyond the request of the firm, the bank is more likely to grant euro if the firm is of lower observable credit risk and less opaque to the bank. However, we also find that the bank is hesitant to offer large and long-term loans in local currency and is more likely to lend in euro when it has more funding in euro.

In sum, our results show that foreign currency lending is not only driven by borrowers who try to benefit from lower interest rates. We find that the substantial share of foreign currency retail loans in Eastern Europe may be partly supply-driven, with banks hesitant to lend long-term in local currency and eager to match the currency structure of their assets and liabilities.

The rest of the paper is organized as follows. Section 2 reviews the existing theoretical and empirical literature. Section 3 describes our data while section 4 reports results from univariate and multivariate analyses. Section 5 concludes.

2 Currency Denomination of Firm Debt: Theory and Evidence

In this section we review existing theoretical and empirical studies on the currency denomination of firm debt, establishing the hypotheses for our empirical analysis and clarifying our contribution to the literature.

2.1 Theory

Starting with firms' demand for foreign currency loans, Goswami and Shrikande (2001) show that firms may use foreign currency debt as hedging instrument for exchange rate exposure of their revenue.[1] Goswami and Shrikande (2001) assume that the uncovered interest rate parity holds,[2] and therefore interest rate differentials do not motivate foreign currency borrowing in their model. However, a wide body of evidence suggests that this parity does not hold for many currencies (see e.g. Froot and Thaler 1990 or Isard 2006). Cowan (2006) and Brown, Ongena and Yesin (2009) consider firms' choices of loan currency in models where the cost of foreign currency debt is lower than the cost of local currency debt. Cowan (2006) shows that firms will be more likely to choose foreign currency debt the higher the interest rate differential, the larger their share of income in foreign currency and the lower their distress costs. The incentive to take foreign currency loans is weaker when the volatility of the exchange rate is higher, as this increases the default risk on unhedged loans.

Cowan (2006) assumes that investors or lenders are perfectly informed about the currency in which firms earn their income. Firms are consequently charged for the credit risk induced by taking an unhedged foreign currency loan. In reality, however, banks may not be able to

[1] Economic exposure to foreign currency can also be managed with foreign exchange derivatives. See Brown (2001) and Mian (1996) for a broad discussion of corporate hedging instruments.

[2] This means that the differences in the nominal interest rates between currencies are cancelled out by the changes in their exchange rate so that the costs of foreign and local currency borrowing are identical.

verify the income sources of small, non-incorporated firms which do not keep detailed and audited financial records (Berger and Udell 1998). This information asymmetry may be particularly pressing in countries with weak corporate governance (Brown, Jappelli and Pagano 2008) and for foreign banks which have less knowledge about local firms (Detragiache, Tressel and Gupta 2008). Brown, Ongena and Yesin (2009) examine the impact of bank-firm information asymmetries on loan currency choice. They show that when lenders are imperfectly informed about the currency or level of firm revenue, local currency borrowers will be more likely to choose foreign currency loans. The reason is that in a pooling "equilibrium" these borrowers are not fully charged for the credit risk involved in taking these unhedged loans.

The above models suggest that banks are risk-neutral intermediaries. However, in countries with less developed financial markets, banks (or their shareholders) may not be able to completely diversify risks. In particular, if forward markets for foreign exchange are not complete banks may behave averse towards exchange rate exposure on their balance sheet. Turning to banks' supply of foreign currency loans, Luca and Petrova (2008) examine a model of credit dollarization in which risk-averse banks and firms choose an optimal portfolio of foreign currency and local currency loans. In line with other portfolio-choice models of foreign currency debt (Ize and Levy-Yeyati 2003) they predict that banks will offer more foreign currency loans when the volatility of domestic inflation is high and the volatility of the real exchange rate is low. Thus, in countries where the monetary authority has not established a credible reputation for pursuing price stability this could imply that banks prefer

to make loans in foreign currency. This tendency may be stronger for long-term loans than for short-term loans as long-term monetary policy may be particularly unpredictable.[3]

Banks are typically limited by prudential regulations in the foreign currency exposure they can take. In a country with underdeveloped derivative markets for foreign currency exchange, as in Bulgaria, this regulation implies that banks' supply of loans in foreign currency will be partly determined by their liabilities in these currencies. Basso, Calvo-Gonzalez and Jurgilas (2007) suggest that banks' supply of foreign currency loans will depend on their access to foreign currency debt through financial markets or from parent-banks abroad. Similarly, Luca and Petrova (2008) suggest that increases in banks' access to foreign currency deposits will lead them to offer more foreign currency loans.[4]

In summary, existing theory suggests that firms will be more likely to request foreign currency loans the larger the share of their income earned in foreign currency and the lower their distress costs in the case of default. Firms with local currency earnings may also be more likely to request foreign currency loans if the lender is imperfectly informed about their income structure. At the macroeconomic level, firms will more likely request foreign currency loans if the interest rate differential between local currency and foreign currency credit is high and the volatility of the exchange rate is low.

Lenders should be more willing to offer foreign currency loans when they have increased access to foreign currency liabilities in the form of debt or customer deposits. Moreover at the macroeconomic level, low credibility of domestic monetary policy may make banks reluctant to lend in local currency, especially at longer maturities.

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[3] Note that this argument is not identical to that in the "original sin" literature (Eichengreen and Hausmann 1999, Hausmann and Panizza 2003), where it is argued that countries cannot finance themselves long-term in local currency because of moral hazard, i.e. they have the possibility to affect the value of their own currency.

[4] For a discussion of deposit dollarization see De Nicolo, Honohan, and Ize (2005).

2.2 Empirical evidence

Several recent studies examine *aggregate dollarization of credit* in developing and transition countries. Most recently, Luca and Petrova (2008) analyze the aggregate share of foreign currency loans for 21 transition countries of Eastern Europe and the former Soviet Union between 1990 and 2003. They find that the aggregate share of foreign currency loans is positively related to aggregate export activity, interest rate differentials, domestic monetary volatility and deposit dollarization, while it is negatively related to the volatility of the exchange rate. They also find that dollarization is lower in countries with more developed foreign exchange markets, and that credit dollarization is affected by prudential regulations which stipulate tighter open position limits.

Basso, Calvo-Gonzalez and Jurgilas (2007) examine aggregate credit dollarization for 24 transition countries for the period 2000 – 2006. They find in particular that foreign funding of banks increases their share of loans in foreign currency. Earlier work by Arteta (2002) on a broad sample of low-income countries as well as Barajas and Morales (2003) on Latin America confirms the hypothesis that higher exchange rate volatility reduces aggregate credit dollarization.

Existing firm-level studies focus on the *currency denomination of debt for large firms,* using financial statement data. Kedia and Mozumdar (2003) find that large US corporations match loan currencies to those of their sales. Keloharju and Niskanen (2001) find that large Finnish corporations also match loan and income currencies. Moreover, they find evidence that loan denomination is driven by interest rate differentials across currencies. Martinez and Werner (2002) and Gelos (2003) show that large Mexican firms which export, and thus earn foreign currency income, use foreign currency loans as a natural hedge to economic exposure. Benavente, Johnson and Morande (2003) as well as Cowan, Hansen and Herrera (2005) find a similar result for Chilean firms. Allayannis, Brown and Klapper (2003) investigate the debt

structure of large East-Asian corporations and find that interest rate differentials as well as asset type explain the use of foreign currency debt. Cowan (2006) investigating around 500 corporations in half a dozen Latin American countries arrives at similar results.

To our knowledge there is only one paper to date which studies loan currency denomination using loan-level data. Brown, Ongena and Yesin (2009) examine the currency denomination of the most recent loan of 3,105 small firms in 24 transition countries, based on responses to the 2005 EBRD *Business Environment and Enterprise Performance Survey*. At the firm level they find strong evidence that the choice of a foreign currency loan is related to foreign currency cash flow. In contrast, they find only weak evidence that foreign currency borrowing is affected by firm-level distress costs or financial opaqueness. At the macroeconomic level the authors find no evidence that interest rate differentials and exchange rate volatility explain differences in foreign currency borrowing in their sample.

Our analysis is based on information from 105,284 loan contracts of a Bulgarian bank to small and medium sized business clients over the period 2003-2007. In contrast to existing studies, our data allows us to examine to what extent the currency denomination of a loan is determined by the clients and / or the bank. As we observe not only the currency denomination of the actual loan extended, but also the firms' currency requests, we are able to identify how clients' demand for foreign currency loans and the bank's supply of such loans are related to firm characteristics, other loan characteristics, macroeconomic conditions and the bank's liability structure. Finally, our dataset allows us to examine the factors that influence the bank's decision to alter a borrower's currency request gaining insights in the bank's weighing of taking on currency vs. credit risks.

3 Data and Methodology

Our dataset covers all annuity loans, credit lines and overdrafts extended to firms by one Bulgarian bank (henceforth called "the Bank") between April 2003 and September 2007. In total the Bank extended 106,091 loans during this period. For each loan disbursed we have information on the loan conditions requested by the firm, the actual loan conditions granted, as well as firm characteristics at the time of the loan application or disbursement. We exclude all observations with missing loan-level or firm-level data leaving us with 105,284 loans to 61,293 different firms. Our dataset also includes monthly indicators of the refinancing structure of the Bank as well as indicators of macroeconomic conditions obtained from the Bulgarian National Bank (BNB) and the International Monetary Fund (IMF). Definitions and sources of all variables are provided in Table 1.

[Insert Table 1 here]

The Bank is a nationwide bank which focuses on lending to small and medium enterprises. Compared to the aggregate banking system, where only 41% of assets are loans to enterprises, 70% of the assets at the Bank are enterprise loans. The volume of outstanding enterprise loans in foreign currency at the Bank (40%) is similar to that of many retail banks in Central and Eastern Europe. As with the majority of banks in Bulgaria and the rest of the region, foreign strategic investors hold a controlling share in the Bank.[5]

[5] In 2007 82% of bank assets in Bulgaria were in the hands of institutions with majority foreign ownership. In Central and Eastern Europe the average share of foreign bank assets in 2007 was 80%.

3.1 The Bank's lending technology and loan portfolio

At the heart of the Bank's lending technology is a personnel-intensive analysis of the borrower's debt capacity.[6] Loan negotiations for our sample of borrowers generally work as follows. When a borrower approaches the Bank, she first of all meets a Client Advisor who assesses whether the borrower meets the Bank's basic requirements. If this is the case, the client fills in a loan application form. On this form the client indicates her preferred loan amount, maturity and *currency* as well as the purpose of the loan. The client also has to provide information about the firm ownership, other bank relations and the free cash flow available for the repayment of the loan.

In a next step, the Bank's credit administration prepares information on the borrower's credit history with this Bank and other banks.[7] At the same time, the loan officer conducts a financial analysis of the firm including a personal visit to the firm to confirm its financial situation.

The loan officer presents the customer's demand and his suggested loan terms together with the information gathered during the financial analysis to the Bank's credit committee, which then makes the final decision on the loan terms granted. Since the borrower's repayment capacity is the core figure in the analysis, loan size (amount and *currency*) and maturity are determined first.

The setting of interest rates and collateral requirements depends on the loan size. For small loans (up to 50,000 EUR) collateral requirements and interest rates are fixed and are not negotiated on an individual basis. For medium-sized loans (above 50,000 EUR) interest rates and collateral requirements are negotiated individually. Given the different lending

[6] To gain insights into the usual loan granting process, we have conducted informal interviews with loan officers and training staff from the Bank's head office.

[7] Enterprise loans in Bulgaria are covered both by the public credit registry and a private credit bureau (see www.doingbusiness.org).

technologies applied to small versus medium loans we treat these two loan types separately throughout our analysis.

[Insert Table 2 here]

Table 2 provides an overview of the Bank's lending activities during our observation period. Panel A and B display the number and volume of disbursed loans by year. The overwhelming number of loans in our sample (98%) are small loans with a volume of less than 50,000 EUR. However, considering the volume of lending, medium loans (33%) are of sizeable importance in the Bank's loan portfolio. Panel A shows further that almost two-thirds of the Bank's loans are disbursed to repeat clients, i.e. borrowers who take more than one loan during our observation period. The subsample of loans to *repeat clients* will be important throughout our empirical exercise as it allows us to control for unobserved (time independent) firm-level characteristics.

Panel C of Table 2 shows that a substantial share of the Bank's lending is in foreign currency rather than in Bulgarian lev (BGN). Loans denominated in euro (henceforth called EUR loans) account for 37% of the loan volume disbursed during our observation period.[8] This share decreased considerably between 2003 and 2007, but even at the end of our observation period one-third of the disbursed loan volume was in EUR. Panel C further reveals that the share of EUR loans varies substantially by loan size. EUR loans make up a limited share of small loans, whereas they dominate medium-sized loans.

[Insert Figure 1 here]

[8] We focus our analysis on foreign currency loans denominated in euro, since they account for 97.5% of the bank's total foreign currency lending.

As we have information on the firms' requested currency as well as the actual currency of the loan granted, we are able to establish when the requested currency coincides with the granted currency, and how often the Bank changes the loan currency. Figure 1 shows that the requested loan currency and the frequency of currency changes by the Bank depend strongly on loan size. Small loans are almost all requested and granted in BGN. Moreover, among those firms who request a EUR loan a substantial share are switched to BGN by the bank (8.9%).[9] Requests for medium loans are equally divided between BGN and EUR. Also, 29% of medium loans requested in BGN are actually granted as EUR loans, while only 2% of the medium loans requested in EUR are actually granted in BGN.[10] Figure 1 shows that firms with medium loans are more likely to be switched from BGN to EUR and less likely to be switched from EUR to BGN than firms with small loans.[11]

Figure 1 also displays the frequencies of requested and granted loans for repeat clients comparing their first loans to their later loans. Interestingly, there is more switching from BGN to EUR and less switching from EUR to BGN for later loans than for first loans.[12]

The patterns displayed in Figures 1 suggest that the currency denomination of loans in our sample is not only determined by firms' requests but also by the Bank's supply considerations. Moreover, whether the Bank grants the requested currency or not seems to depend on the requested currency, the size of the loan and the duration of the relationship with the firm.

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[9] A pearson chi-square test confirms that the probability of being granted the requested currency is significantly lower for firms requesting *small* loans in EUR compared to BGN ($p < 0.001$).

[10] A pearson chi-square test confirms that the probability of being granted the requested currency is significantly lower for firms requesting *medium* loans in BGN compared to EUR ($p < 0.001$).

[11] Pearson chi-square tests confirm that the probability of being granted BGN if you requested BGN currency is significantly lower ($p < 0.001$) and the probability of being granted EUR if you requested EUR currency is significantly higher ($p < 0.001$) for medium versus small loans.

[12] Pearson chi-square tests confirm that the probability of being granted BGN if you requested BGN is significantly lower ($p < 0.001$) and that the probability of being granted EUR if you requested EUR currency is significantly higher for later loans versus first loans ($p = 0.028$).

3.2 The firms' decisions to request EUR loans

To analyze firms' requested loan currencies, we examine a model in which the dependent variable $\Pr(\textit{EUR requested})_{i,k,t}$ is the probability that a firm *i* that is taking a loan *k* in period *t* requests a EUR loan:

$$\Pr(\textit{EUR requested})_{i,k,t} = \alpha + \beta_1 F_{i,t} + \beta_2 L_k + \beta_3 M_t + \varepsilon_{i,k,t} \quad (1)$$

In this model $F_{i,t}$ and L_k are vectors of firm characteristics and other requested loan characteristics while M_t is a vector of the macroeconomic conditions at the time of loan disbursement.

Firm income, distress costs, and transparency

Firms which have income in foreign currency may use foreign currency debt to hedge the economic exposure. They are also less likely to be forced into default by exchange rate depreciations and thus more likely to take foreign currency loans. Our proxy for foreign currency revenue is the dummy variable *EUR account* which equals one if the firm has a savings or term account in EUR at the disbursement date of the loan, and equals zero otherwise. We believe firms with a EUR savings account to be more likely to have income in EUR.[13] Brown, Ongena and Yesin (2009) argue that firms with higher income to debt-service ratios are less likely to be forced into default by exchange rate depreciations and are thus more likely to take foreign currency loans. Our indicator of the firm's available monthly income is the variable *Disposable income* which measures the firm's monthly free cash flow (in log EUR) at loan disbursement.

[13] To rule out that the existence of a savings or term account *per se* affects a firm's decision, we ran regressions including the variable *BGN account* indicating whether the firm holds a BGN savings or term account at the disbursement date of the loan. The results remain qualitatively unaltered.

Theory predicts that firms with low distress costs in the case of default are more likely to request foreign currency loans (Goswami and Shrikande 2001 and Cowan 2006). We include two indictors of firm-level distress costs in our analysis. Our first indicator is *Leverage*, which measures the firm's total liabilities as a share of its total assets. Being highly levered leads to higher distress costs since it is very costly for firms to obtain emergency financing when facing default. Firms in which the owner or manager have higher private values of continuing their business also face higher distress costs in the case of default (Froot, Scharfstein and Stein 1993). We expect this private value to be higher in sole proprietorships than in incorporated companies. Our second indicator of distress costs *Sole proprietorship* therefore equals one if the firm is a sole proprietorship and equals zero otherwise.

We include one direct indicator for the degree of information asymmetry between the firm and the Bank. The variable *Bank relationship* measures the length of the bank-borrower relationship in months since their first contact. We expect that the Bank can gain private information about the firm's revenue potential by observing the firm's past repayment behavior or it's usage of other bank products. Both should be positively correlated with the length of a bank relationship.

Firm controls and other requested loan terms

As larger and older firms are more likely to have export income, less likely to default due to a given foreign currency loan and more likely to be financially transparent than smaller and younger firms, we include the log of total firm *Assets* (measured in EUR) as well as firm *Age* (log of age in years) as firm-level control variables.

Other requested loan terms, such as loan size and loan maturity may affect the firms' currency request in both directions. As argued by Brown, Ongena and Yesin (2009) firms with a higher debt-to-income burden are more likely to risk default due to exchange rate

changes. Thus firms with larger loans and shorter maturities (and therefore c. p. higher installments) may be less likely to borrow in foreign currency. However, the risk of experiencing sharp exchange rate fluctuations may be lower for shorter loans, suggesting that firms with shorter loans might as well be more likely to borrow in foreign currency. Similarly, firms with larger loans might also be more likely to borrow in foreign currency since the (absolute) interest rate advantage of borrowing in foreign currency is higher for larger loans. To control for these effects we include *Requested amount* and *Requested maturity* which measure the log of the requested loan amount (measured in EUR) and the log of the requested loan maturity (in months) respectively. From the firm's loan application we further include an indicator of the purpose of the loan. The dummy variable *Fixed capital loan* equals one if the purpose of the loan is to finance a tangible fixed capital investment, and equals zero otherwise. Since the tangible asset may be liquidated in case of default, distress costs (e.g. the volume of required emergency funding) may be lower for these loans.

To capture all remaining differences in firm characteristics our regressions contain seven *Industry dummies*, which indicate the industry of the firms main activity and 33 *Branch dummies* which capture the location of the branch where the firm applied for the loan.[14] In particular, the industry and branch dummies control for potential foreign currency earnings since foreign currency income is more likely in certain industries (e. g. trade, tourism or transport) and locations (trade and tourist centers such as Sofia or Varna).

Macroeconomic conditions

We expect that firms are more likely to request foreign currency loans if the interest rate differential on foreign currency loans is high, expected exchange rate volatility is low and domestic inflation volatility is high (Ize and Levy-Yeyati, 2003). In our analysis of firms'

[14] As we do not have information on the location of the firm we use the available information on branch location.

currency choices we control for the prevailing monetary conditions at the time of loan disbursement[15] with three indicators based on data obtained from the Bulgarian National Bank and the International Monetary Fund.

For each month during our observation period we calculate the *Interest differential* by subtracting the (3 month) interbank rate in EUR from the interbank rate in BGN. We use this market based measure of interest rate differentials, as it gives us a measure of the "risk-free" interest rate advantage on foreign currency funds. We also include an indicator of the expected volatility of the BGN/EUR exchange rate. Bulgaria introduced a currency board in July 1997 which fixed the exchange rate towards the EUR. This currency board held throughout our observation period, so that there was almost no actual exchange rate volatility. However, this by no means implies that firms or banks in Bulgaria were confident that a depreciation of the Bulgarian lev would not happen. Indeed, Carlson and Valev (2008) reports survey evidence suggesting that in 2004 14% of the Bulgarians believed the currency board might collapse with a sharp devaluation within the next 12 months. Considering a period of 5 years more than 25% of respondents expected the currency board to collapse with a sharp devaluation. Our measure of expected exchange rate volatility is the dummy variable *EU announcement* which is one for all loans disbursed after the announcement (on 26 September 2006) that Bulgaria would definitely join the EU in January 2007. As a new accession country to the EU, Bulgaria was from that date on committed to joining the euro zone at some future date, which may have lowered expected exchange rate volatility.

We measure *Inflation volatility* as the variance of monthly changes in the consumer price index over the twelve months prior to the month in which the loan was disbursed.

[15] The firm's request for a loan and thus the currency choice is naturally prior to the date of loan disbursement. Since the Bank's loan granting procedure is well established and clear-cut, the time span between loan application and disbursement is normally short and macroeconomic conditions should not have changed considerably in the meantime.

Finally, we expect that the demand for foreign currency loans at the Bank may depend on the possibilities of firms getting similar loans at other banks. We control for the firms' possibilities to obtain foreign currency loans from alternative providers with the variable *Foreign currency loans* which measures in each month the share of corporate loans in the entire Bulgarian banking system which are denominated in foreign currency.

3.3 The Bank's decision to grant EUR loans

Our dependent variable $\Pr(\textit{EUR granted})_{i,k,t}$ is the probability that the Bank grants a loan *k* to firm *i* in period *t* in EUR rather than BGN. In our empirical model the vectors L_k, $F_{i,t}$ and M_t again include firm and loan characteristics as well as indicators of macroeconomic conditions, while the vector B_t captures indicators of the Bank's funding structure at the time when a loan is disbursed.

$$\Pr(\textit{EUR granted})_{i,k,t} = \alpha + \beta_1 F_{i,t} + \beta_2 L_k + \beta_3 M_t + \beta_4 B_t + \varepsilon_{i,k,t} \qquad (2)$$

The Bank's decision to grant a loan in local or foreign currency will depend on the expected credit risk for either type of loan. We use our above mentioned firm-level indicators *EUR account*, *Disposable income*, *Leverage*, *Sole proprietorship*, *Bank relationship*, *Assets*, and *Age*, as well as our *Industry dummies* and *Branch dummies* to control for observable firm-level credit risk.

As described in section 3.1, the Bank's currency decision is jointly determined with the loan amount and loan maturity. To circumvent the endogeneity of the loan currency to the granted loan amount and loan maturity we include the exogenous requested loan terms (*Requested amount*, *Requested maturity*, *Fixed capital loan*) as explanatory variables in our supply regression.

The Bank's currency decision should further depend on the mark-up it can earn by lending in either currency. We therefore include the variable *Spread differential* which measures the difference between the intermediation spread in EUR and BGN. The (risk-free) intermediation spreads are calculated as the interbank rate minus the household term deposit rates in BGN or EUR respectively. Luca and Petrova (2008) suggest that banks will offer more foreign currency loans when the volatility of the real exchange rate is low and the volatility of domestic inflation is high. To capture this we include the variables *EU announcement* and *Inflation volatility*. We also include the variable *Foreign currency loans* which measures the competition the Bank faces in the foreign currency loan market.

Basso, Calvo-Gonzalez and Jurgilas (2007) suggest that banks with increased access to foreign currency funds may offer more foreign currency loans. We therefore include the variable *EUR liabilities / Total liabilities* which measures the Bank's liabilities denominated in EUR as a share of its total liabilities. Empirical evidence for transition countries further suggests that customer deposits in foreign currency may have a stronger impact on credit "dollarization" than foreign currency debt sourced from financial institutions or capital markets (Luca and Petrova, 2008). To control for this potential composition effect of the Bank's foreign currency liabilities, we introduce *EUR debt / EUR liabilities* which measures the Bank's debt denominated in EUR as a share of its total EUR liabilities. Both indicators of the Bank's funding structure are calculated using balance sheet information from the month prior to a loan disbursement.

3.4 Summary statistics

Table 3 provides summary statistics for our explanatory variables. Firm- and loan-level variables are presented in Panel A, while our indicators of macroeconomic conditions and bank funding are presented in Panel B. Panel C displays pairwise correlations.

Panel A confirms that the loans in our sample can be characterized as retail loans to small and medium enterprises: The firms in our sample are predominantly sole proprietorships, with mean assets of less than 60,000 EUR and an average age of less than ten years. The loans they receive are on average smaller than 10,000 EUR, with no loan in the sample exceeding 1 million EUR. The average loan maturity is less than three years, while the maximum maturity is twelve years.

[Insert Table 3 here]

Panel B of Table 3 presents summary statistics for macroeconomic conditions and the Bank's liabilities by year. The *Interest differential* was positive throughout our observation period confirming that firms did have a cost-incentive to demand EUR loans.[16] The *Spread differential* between EUR and BGN funds was moderate during our observation period, and in 2004 and 2005 even negative, suggesting that the profitability of both loan currencies for banks was similar. *Inflation volatility* declined during our observation period, suggesting that foreign currency loans may have become less attractive. Nevertheless, the share of *Foreign currency loans* in the whole banking system increased slightly during the sample period.

The Bank's funding in foreign currency (*EUR liabilities / Total liabilities*) increased sharply between 2003 and 2004, and then remained relatively constant during the remainder of our observation period. The composition of the Bank's foreign currency refinancing changed substantially over the sample period. In 2003 79% of its EUR liabilities was debt sourced from other banks, International Financial Institutions or the capital market. In 2007, in contrast, customer deposits accounted for the majority of the Bank's EUR liabilities.

[16] While these interest rate differentials are based on short-term interbank rates, they do suggest that the interest rate advantage on foreign currency funds is smaller in Bulgaria during our observation period than in other transition countries (see e.g. Brown, Ongena and Yesin 2009).

4 Results

4.1 Univariate tests

The characteristics of those firms which request local currency loans differ strongly from those which request foreign currency loans. Columns (1) and (2) of Table 4 display sample means by requested currency, while column (3) displays results of difference tests between the two sub-samples for each variable. The table supports the hypothesis that firms which request foreign currency loans are more likely to have foreign currency income (*EUR account*) and have lower distress costs (not *Sole proprietorship).* We also find that firms which request EUR loans have higher income (*Disposable income*), are more transparent towards the bank (*Bank relationship*), and are larger (*Assets*) and older (*Age*).

Firms which request EUR loans also differ from firms which request BGN loans concerning other loan terms. They request larger loans (*Requested amount*), longer-term loans (*Requested maturity*) and are more likely to use the loan for investment purposes (*Fixed capital loan*). These findings contradict our prediction that firms with lower debt-service burdens will choose foreign currency loans, and suggest rather that absolute interest rate advantages or the anticipation of the Bank's reluctance to provide larger and long-term loans in local currency may be driving currency requests.

At the macroeconomic level we find that firms are more likely to request EUR loans in periods when the *Interest differential* is higher. Surprisingly, we find that firms are less likely to request EUR loans after the *EU announcement*, suggesting that this announcement may have not only reduced expected exchange rate volatility, but also increased the credibility of future domestic monetary policy. Not surprisingly, we find that the Bank's liability structure (*EUR liabilities / Total liabilities*, *EUR debt / EUR liabilities*) has little impact on the firms' currency requests.

[Insert Table 4 here]

In Table 4 we also report univariate tests comparing those firms who were *granted* foreign currency loans to those who were granted BGN loans. Columns (3-6) present statistics and tests for loans requested in BGN, while columns (7-9) present statistics and tests for loans requested in EUR.

From columns (4-6) we see that the Bank's decision to alter the loan currency from BGN to EUR seems to be correlated with lower observable credit risk and greater financial transparency of the firm (*EUR account, Disposable income, Bank relationship, Assets, Age*). However, we also see that in those instances where the Bank altered the currency to EUR, the requested loan amount and maturity are higher than in the those cases where BGN was granted. While the first observation (larger requested amount) may be in line with the firms' objective of achieving greater (absolute) interest savings, the longer maturity for loans switched to EUR suggests that the Bank may be shifting exchange rate risk to its clients.

Comparing the macroeconomic conditions and bank-funding at the time when loans are disbursed, we find that the bank is more likely to switch a loan from BGN to EUR after the *EU announcement* and when the *Spread differential*, i.e. its earnings on intermediating EUR funds, is higher. Moreover, while the share of EUR liabilities at the bank appears similar for the switched and non-switched firms, we find that the Bank is more likely to switch a firm in periods where it has less debt financing and more customer financing in EUR *(EUR debt / EUR liabilities).*

For firms which request EUR, columns (7-9) of Table 4 show that firms which are switched to BGN can be characterized by higher credit risk and lower financial transparency. These firms are smaller, have less disposable income, are more often sole proprietorships and have shorter relationships with the Bank than firms who requested and received EUR.

Confirming our findings above, in cases where the Bank alters loan currency from EUR to BGN the requested loan size is smaller and the requested maturity is shorter.

4.2 Multivariate regressions: Firms' currency requests

Table 5 displays our regression results for firms' decisions to request foreign currency (EUR) rather than local currency (BGN) loans based on estimations for both the full sample and the panel of repeat clients. All estimations include industry and branch dummies. Standard errors are presented in brackets and for regressions with the full sample are adjusted for clustering at the industry-branch level. Estimations for repeat clients include firm-level random effects to account for unobserved firm heterogeneity.[17]

[Insert Table 5 here]

Main effects of firm-, loan- and macroeconomic variables

Column (1) of Table 5 presents marginal effects from a logit estimation for the full sample. The results confirm our main hypotheses: firms are more likely to request EUR loans if the interest rate advantage on EUR loans is higher, if they have foreign income, and if they have lower distress costs.

The request for a foreign currency loan is positively related to our indicator of foreign currency revenue, *EUR account*. Also, the impact of firm-level distress costs is in line with theoretical predictions. Firms with higher potential distress cost (higher *Leverage*, *Sole proprietorship*) are less likely to demand EUR loans. Further supporting this result we find

[17] For the subsample of repeat clients we drop *Age* as it increases parallel to *Duration* over a sequence of several loans.

that larger firms (higher *Assets*) and firms with tangible assets (*Fixed capital loan*) are more likely to demand foreign currency loans.

Contrary to our expectations, firms with higher debt-service to income ratios (lower *Disposable income* and higher *Requested amount*) are more likely to demand foreign currency loans. An explanation for this result could be that firms with lower disposable incomes are less able to afford the higher interest rates on local currency loans, and that the *absolute* interest rate savings from borrowing in foreign currency increases with loan size.

Our results do not support the conjecture that opaqueness in the bank-firm relationship may encourage (local currency earning) firms to request foreign currency loans. The significantly positive coefficient of *Bank relationship* suggests that more transparent firms (to the Bank) are more likely to request a foreign currency loan. This finding confirms the results of Brown, Ongena and Yesin (2009) and may be explained by firms' anticipation that banks may only offer foreign currency loans to firms they know well.

We find that firms with a longer *Requested maturity* are more likely to request foreign currency loans. This result is surprising, given that the risk of adverse exchange-rate movements is likely to be higher in the long run. One explanation for this finding is that firms anticipate that the Bank may be reluctant to offer long-term loans in local currency**.**

At the macroeconomic level we find that firms are more likely to request EUR loans when the *Interest rate differential* is higher and domestic *Inflation volatility* is higher. In contrast, we do not find that lower expected exchange rate volatility as measured by *EU announcement* increases foreign currency loan demand. This result may be driven by the fact that the announcement to join the EU also stabilizes expectations about domestic monetary policy. The possibility to get *Foreign currency loans* from other financial institutions does not affect the currency requests at this Bank.

Small loans versus *medium loans*

Our descriptive statistics in Figure 1 show that small loans make up the overwhelming share of loans in our sample (98%) and are much less likely to be requested in foreign currency (2.9%) than medium loans (54.2%). As discussed in section 3.1, small loans from the Bank are standardized products with fixed loan conditions (interest rate, collateral conditions). Thus, the low frequency of foreign currency demand among small loans may not only be driven by firm characteristics, but also by the expectations of entrepreneurs that they do not meet the banks fixed criteria for such loans. As a result, the full-sample results presented in column (1) may be dominated by the large number of small loans, for which firm characteristics, other loan terms and macroeconomic conditions may have less influence on requested currency.

Columns (2) and (3) of Table 5 examine whether the determinants of requested loan currency differ for small versus medium loans. The two columns present estimates from a single OLS estimation, with main effects of all explanatory variables reported in column (2) and interaction terms with *Medium loan* reported in column (3). The main effects displayed in column (2) suggest that the majority of our full-sample results hold also for the sub-sample of small loans. The main effects for our indicators of firm income, distress costs and transparency show mostly the same signs and significance as in column (1). This also applies to our indicators of requested loan terms and macroeconomic conditions.

While our qualitative results hold for both small and medium loans, the impact of several firm and loan characteristics is stronger for medium loans. The interaction terms with *Medium loan* displayed in column (3) suggest that the effects of firm transparency, size and income (*Bank relationship*, *Assets*, *Disposable income*) as well as other requested loan terms (*Requested amount*, *Requested maturity*, *Fixed capital loan*) are significantly stronger for medium than for small loans. On the other hand, the effects of foreign currency income (*EUR*

account), firm *Leverage* or macroeconomic conditions do not seem to differ between the two sub-samples. We conclude that while our quantitative results vary for several explanatory variables, our qualitative results from the full-sample regressions seem to be robust.

First loans versus *later loans* of repeat clients

Firms' anticipations about the willingness of the Bank to provide foreign or local currency loans may influence their requested loan currency. This raises doubts about whether our data allows us really to analyze the firm's "pure" demand for foreign currency loans at all. Our full sample results in columns (1) actually suggest that the loan currency request by firms may be partly driven by their anticipation of the Bank's behavior: This may explain why more transparent firms and firms with longer requested maturity are more likely to request foreign currency loans.

In Table 5 we examine to what extent "anticipation effects" may be driving the requested loan currency of firms. We conjecture that anticipation effects should be stronger if the firm is actually familiar with the Bank's loan supply behavior. If this is the case we should see differences in the determinants of requested loan currency for the first loan of a firm compared to its later loans with the Bank. In columns (4) and (5) we examine whether the determinants of requested loan currency differ between first loans and later loans for our panel of repeat clients. The two columns present estimates from a single OLS estimation, with the main effects of all explanatory variables reported in column (4) and interaction terms with *Later loan* reported in column (5).

The interaction terms in column (5) suggest that the anticipation effect may affect our results for loan characteristics but not for firm characteristics. The interaction terms of *Later loan* with *Requested amount*, *Requested maturity* and *Fixed capital loan* are all positive suggesting that firms learn over time that larger loans with a longer maturity and for

investment purposes are more likely to be granted in foreign currency. In contrast, besides a stronger effect for firm size, there are no significant differences in the firm-level determinants of requested loan currency between first and later loans.

4.3 Multivariate regressions: The Bank's loan currency decision

Tables 6 displays our results for the Bank's currency decision with Panel A reporting results for all loans, while Panel B reports results for medium loans only.

As illustrated in Figure 1 above, we observe the Bank's currency decision both for those loans which were requested in foreign currency (EUR) and for those which were requested in local currency (BGN). We can therefore first examine the Bank's currency choice conditional on the firms' requested currency: Among those firms which request EUR, which are more likely to receive EUR? And: Among those firms which request BGN, which are more likely to be switched to EUR? Secondly, as we observe the Bank's currency decision for both subsets of currency requests, our data allows us, without having to resort to a selection model, to examine the Bank's currency choice for any firm in our sample. Among all firms in our sample, which are more likely to be granted EUR, and does this decision depend on the currency requested by the firm?

Column (1) of Panel A displays our results for firms which request a loan in foreign currency (EUR). We find that for these firms the Bank's currency decision is related to some indicators of observable credit risk: The Bank is more likely to grant a EUR loan to firms which are not a *Sole proprietorship* and which are larger (*Assets*). Other indicators of low credit risk (*EUR account,* low firm *Leverage*, *Bank relationship*) are also positively related to the Bank's decision to offer EUR, but lack precision.

The size (*Requested amount*) and purpose of the requested loan (*Fixed capital loan*) also affect the Bank's currency decision. The fact that investment loans are more likely to be

granted in EUR may again be related to lower credit risk. The fact that large loans are more likely to be granted in EUR provides support for our conjecture that the Bank may not trust domestic monetary policy and is thus reluctant to offer large loans in BGN.

We find little impact of our macroeconomic indicators or the bank's funding structure on its probability of offering a EUR loan to firms requesting EUR. The Bank's currency decision seems not related to exchange rate volatility, inflation volatility and availability of foreign currency loans from competitors. Moreover, contrary to our expectations we find that in periods where the intermediation spread on EUR funds is relatively higher, the Bank is less likely to offer EUR loans. Finally, while the Bank's share of funding in foreign currency and its share of EUR funding from customers are both positively related to the probability of granting a EUR loan, neither of these effects are significant.

[Table 6 here]

Column (2) of Panel A examines the Bank's currency choice for those firms which request a loan in local currency (BGN). We find that all firm-level and loan-level variables (*Sole proprietorship, Assets, Requested amount*, *Fixed capital loan*) which make the Bank more inclined to offer a EUR loan to a firm which requested foreign currency, also make the Bank more likely to offer a EUR loan to a firm which requested local currency. In addition, our indicators of firm income (*EUR account, Disposable income*), as well as the *Requested maturity* of the loan which did not have a significant effect for the latter sample do turn up significant for the clients who request local currency. These results confirm that the Bank's currency choice is strongly related to the credit risk of the firm. However, they again suggest that the Bank is reluctant to offer large and long-term loans in local currency.

At the macroeconomic-level the bank's decision to switch loans from local currency to foreign currency seems unrelated to the intermediation spread (*Spread differential)* but is positively related to perceived exchange rate stability (*EU announcement*). Interestingly, the Bank's share of funding in foreign currency (*EUR / Total liabilities)* is again positively related to the probability of granting a EUR loan, and is more precisely measured in this large sample.

The results displayed in columns (1) and (2) suggest that the Bank's currency decision process is qualitatively similar for firms which request foreign and local currency. In columns (3-4) and (5-6) of Panel A we therefore use pooled regressions to examine whether the Bank's currency decision is independent of the firm's requested currency. Our results suggest that this is not the case, but that, in contrast, the Bank's currency decision is significantly affected by the firms' request. The columns display estimates of pooled OLS regressions including loans which were requested in local and foreign currency. Columns (3-4) show results for all loans, while columns (5-6) show results from our panel of repeat clients. Main effects of all explanatory variables are reported in columns (3) and (5) respectively while interaction terms with *BGN requested* are reported in columns (4) and (6) respectively.

Our pooled regressions show that, controlling for firm characteristics, loan characteristics, the macroeconomic environment and Bank funding, the Bank is less likely to offer a foreign currency loan to a firm which actually wanted local currency (*BGN requested*). Also, we find that the importance of firm characteristics, loan characteristics and macroeconomic conditions for the Bank's currency decision differs for firms which request BGN compared to firms which request EUR: The interaction terms in columns (4) and (6) suggest that firm leverage, firm size, firm-transparency (*Bank relationship*), loan maturity, loan purpose and loan spreads seem less relevant for decisions when local currency is requested, while firm ownership seems more important in the decision process. The results in column (6) also suggest that

more bank funding in foreign currency does not lead the Bank to increase lending across the board; in contrast those firms which request EUR are much more likely to get EUR than firms which requested local currency.

Our results above suggest that the impact of firm characteristics and other requested loan terms on the Bank's currency decision differ for firms which request EUR compared to those which request BGN. One explanation for this finding is that, as described in section 3.1, the credit analysis of this Bank is first and foremost geared towards analyzing the capability of the firm to repay the *requested* loan. It seems therefore likely that the bank only proposes a different currency if some characteristics of the firm (e.g. foreign currency income) or the loan request (e.g. maturity) stand out and make it particularly obvious that another currency may be better for the firm (or the Bank). An alternative explanation is that the interaction terms of our pooled regressions simply capture non-linearities in the effects of our explanatory variables. We know from Table 3 and Table 5 that firms which demand EUR have fundamentally different characteristics (size, ownership, income) and request different loan terms (size, maturity) than firms which request BGN. If the impact of these variables on the Bank's currency decision is non-linear this would be picked up in the interaction terms.

To check whether non-linearities drive our results in Panel A of Table 6, we repeat our analysis of the Bank's currency decision for the more homogenous sample of *medium loans* in Panel B of the table. The estimates in this Panel B are less precise than those in Panel A due to the lower number of observations. However, the results do confirm two main results from that panel: First, the Bank's currency decision does take into account the requested currency of the firm. This is captured by the negative coefficient of *BGN requested* in columns (3) and (5). Second, as captured by significant interaction terms in columns (4) and (6), some indicators of firm riskiness (*Disposable income*), requested loan terms (*Requested amount, Requested maturity, Fixed capital loan*) and bank funding (*EUR liabilities / Total liabilities)*

seem to have a differential impact on the Bank's currency choice, for firms which requested local currency compared to those which requested foreign currency. Interestingly though, the sign of the differential effects for *Requested maturity* (in columns 4 and 6), loan purpose (*Fixed capital loan* in columns 4 and 6) and bank funding (*EUR liabilities / Total liabilities* in column 6) are opposite to those found in Panel A. Thus, for this sample of medium-sized loans not only a higher requested amount, but a *longer* requested maturity, and the request for an investment loan are particularly strong determinants of whether a request for local currency gets switched to foreign currency. In contrast to our Panel A results we also find that, for medium loans, more Bank funding in foreign currency leads the Bank to increase its foreign currency lending more to firms which request local currency than to firms that request foreign currency.

Summarizing, our results from Table 6 we establish three main results regarding the Bank's currency decision: First, as expected, the Bank considers both the currency request of the firm as well as the credit risk associated with lending to the firm when deciding whether to lend in local or foreign currency. Second, other requested loan terms such as loan size, maturity and loan purpose affect the probability of firms which want foreign currency to actually get foreign currency, and they are also particularly relevant for whether firms which want local currency get switched to foreign currency. Third, the objective of matching the currency structure of its assets and liabilities does affect the Bank's willingness to grant foreign currency loans, not only to those firms which request such loans, but also to those which don't.

4.4 Switching loan currency and credit risk

Figure 1 shows that nearly one-third of the firms which request a medium loan in local currency actually end up with a foreign currency loan. Our results from Table 6, Panel B

suggest that this finding is driven not only by the Bank's analysis of credit risk, but also by its reluctance to lend large amounts for longer maturities in local currency, and by matching of the currency structure of its assets to that of its liabilities. In Table 7 we examine what this implies for the quality of those loans which are switched from local to foreign currency. Comparing those EUR loans which were requested in BGN to those which were requested in EUR we examine whether the bank consciously takes on greater credit risk by switching the currency of loans.

Unfortunately we do not have precise indicators of the ex-post performance of the loans in our sample. However, we can assess the ex-ante credit risk associated with each loan by examining the pricing behavior of the bank. If loans which are switched from BGN to EUR involve a higher default probability we should find that the bank charges a higher risk premium and thus nominal interest rate on these loans than on otherwise identical loans, which were requested in EUR. Note that we can conduct this exercise for medium loans only, as small loans from the Bank are given at standardized interest rates.

[Table 7 here]

Table 7 examines the pricing of medium loans denominated in EUR, relating the nominal interest rate to firm characteristics, *actual* loan terms (*Amount, Maturity, Annuity loan, Collateral*) and the requested currency (*BGN requested*). In all specifications we control for macroeconomic conditions and bank-funding with time (year-quarter) fixed effects. The baseline results reported in column (1) for all clients confirm that the bank does practice risk adjusted pricing for the segment of medium loans. Firms which are more likely to have foreign income (*EUR account*), are more transparent (not *Sole proprietorship, Bank relationship*) and are larger (*Assets*) pay lower interest rates on EUR loans. Firms with larger

loans and shorter maturities also pay lower interest rates, while the repayment schedule (*Annuity loan*) and collateralization of the loan do not seem to affect pricing. These findings are confirmed by results for the panel of repeat clients in column (3), which control for unobserved firm heterogeneity with firm effects.

We also find that firms with loans which were switched from BGN to EUR pay significantly higher interest rates than firms with loans which were requested and granted in EUR. The results in columns (1) and (3) suggest that loans with switched currency have on average 13-18 basis points higher rates. At first sight, this effect appears small compared to the average interest rate of 10.2% for this sub-sample, as well as to the dispersion of interest rates for this sample which varied depending on year-quarter between 500 and 600 basis points. However, the difference is similar in magnitude to the effect on interest rates of other unfavorable firm characteristics such as being a *Sole proprietorship* or not having a foreign currency account (*EUR account*).

The pricing of loans which were switched from BGN to EUR suggests that by offering these loans in foreign currency the bank may be exposing the firm to higher default risk and itself to higher credit risk. However, higher interest rates for switched loans may also be explained by market power and bargaining by the bank. During our observation period, interest rates on medium loans in BGN are on average 38 basis points higher than interest rates on medium loans in EUR. As firms which requested loans in BGN were prepared to pay the higher interest rate, the bank may be simply reaping part of the "saved interest expenses" for the firm, by charging higher interest on switched loans.

In columns (2) and (4) of Table 7 we examine whether the higher interest rate on switched loans may be explained by market power of the bank rather than higher credit risk. To this end, we include not only the main term of *BGN requested* but also its interaction term with the variable *Interest differential*, which captures the (risk-free) difference in local currency

and foreign currency interest rates. If market power alone explains the higher pricing of switched loans we should find the main term of *BGN requested* to be insignificant and the interaction term of *BGN requested * Interest differential* to be significantly positive. The results in columns (2) and (4) show, however, exactly the opposite. We find that the main effect of BGN requested remains significant and positive while the interaction term *BGN requested * Interest differential* is not significant at all. We conclude therefore that the higher relative pricing of loans which are switched from BGN to EUR reflects higher default and credit risk rather than bargaining by the Bank.

5 Conclusions

In this paper we examine the currency denomination of loans extended to small firms by one retail bank in Bulgaria. Our analysis is based on credit file data for 105,284 loans over the period 2003-2007. In contrast to existing studies, our data allows us to disentangle demand and supply side drivers of the currency denomination of loans. We observe not only the actual currency denomination of the loan extended, but also the loan currency that was requested by the firms in their loan application. We can therefore identify how clients' demand for foreign currency loans and the Bank's supply of such loans are related to firm characteristics, other loan terms, macroeconomic conditions and the Bank's liability structure. Our results thus suggest that foreign currency borrowing in Eastern Europe is at least partly supply-driven, with banks hesitant to lend long-term in local currency and eager to match the currency structure of their assets and liabilities.

Our results have implications for policy makers throughout Eastern Europe who have recently taken measures to discourage foreign currency borrowing in the retail sector (Rosenberg and Tirpak 2008). In Hungary, Poland and Latvia, for example, banks are now forced to disclose the exchange rate risks involved in foreign currency borrowing and have

had to tighten eligibility criteria for such loans. In Romania and Croatia, on the other hand, supervisory authorities have imposed stronger provisioning requirements on foreign currency compared to local currency loans. As we find that foreign currency borrowing in Emerging Europe seems to be driven by both demand and supply factors, measures that address only one of these sides may not be enough to curb foreign currency borrowing.

Our results also have implications for development practitioners, aiming to foster credit access for small firms in developing and emerging economies. Our results suggest that providing funds to retail banks in foreign currency may lead these intermediaries to impose currency risks on their clients. Recent attempts to create refinancing instruments in local currency may alleviate such risks.

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Table 1. Variable definitions and data sources

Sources: IFS: International Financial Statistics of the International Monetary Fund. BNB: Bulgarian National Bank.

Variable	Definition	Source
Dependent variables		
EUR requested	Firm requested EUR loan (1=yes, 0=no)	Bank
Monetary conditions & the banki	Bank granted EUR loan (1=yes, 0=no)	Bank
Firm characteristics		
EUR account	Firm holds EUR savings or term account at disbursement date (1=yes, 0=no)	Bank
Disposable income	Total disposable income per month at disbursement date (Log EUR)	Bank
Leverage	Total debt as share of total assets of firm at disbursement date (%)	Bank
Sole proprietorship	Firm is sole proprietorship at disbursement date (1=yes, 0=no)	Bank
Bank relationship	Time since first contact between bank and client at disbursement date (Months)	
Assets	Total assets of firm at disbursement date (Log EUR)	Bank
Age	Firm age at disbursement date (Log years)	Bank
Industry	Industry dummies which are one if firm belongs to one of the following sectors: Construction, Manufacturing, Trade, Transport, Tourism, Other services. Baseline industry is Agriculture.	Bank
Loan application		
Requested amount	Requested loan amount (Log EUR)	Bank
Requested maturity	Requested loan maturity (Log months)	Bank
Fixed capital loan	Loan is for fixed capital financing (1=yes, 0=no)	Bank
Loan granted		
Amount	Granted loan amount (Log EUR)	Bank
Maturity	Granted loan maturity (Log months)	Bank
Annuity loan	Loan is an annuity loan (1=yes, 0=no) vs. credit line or overdraft	Bank
Collateral	Loan is collateralized (1=yes, 0=no)	
Interest rate	Interest rate per annum	Bank
Later loan	Loan is non-initial loan for repeat clients (1=yes, 0=no)	Bank
Medium loan	Loan amount exceeeds 50'000 euro (1=yes, 0=no)	Bank
Branch	Branch dummies which equal 1 for the branch which granted the loan	Bank
Macroeconomic conditions		
Interest differential	Interbank rate BGN (3 month Sofibor) minus interbank rate EUR (3 month Euribor) (%)	BNB
Spread differential	Intermeditaion spread (3 month interbank rate minus 1 month household term deposit rate) in EUR minus spread in BGN (%)	BNB
Inflation volatility	Variance of monthly changes in the consumer price index over 12 months prior to beginning of the quarter in which loan is disbursed (%)	IFS
Foreign currency loans	Share of foreign currency loans to corporations in total banking system (%)	BNB
Bank funding		
EUR liabilities / Total liabilities	EUR liabilities as share of bank's total liabilities in month before loan disbursement (% end of month)	Bank
EUR debt / EUR liabilities	EUR debt as share of bank's EUR liabilities in month before loan disbursement (% end of month)	Bank

Table 2. Loan disbursements

This table displays statistics on the bank's loan portfolio. Results are provided for the full sample and the following subsamples: *Small loans*: Loans with amounts up to 50,000 EUR. *Medium loans*: Loans with loan amounts over 50,000 EUR. *Repeat clients*: Loans disbursed to firms that take out more than one loan from the bank during the observation period.

Panel A. Number of loans disbursed

	Full sample	Small loans	Medium loans	Repeat clients
2003	10,766	10,545	215	7,553
2004	18,621	18,249	372	14,282
2005	23,210	22,673	537	17,738
2006	28,153	27,554	599	18,588
2007	24,540	24,039	501	10,978
Total	105,284	103,060	2,224	69,139

Panel B. Volume of loans disbursed (in million EUR)

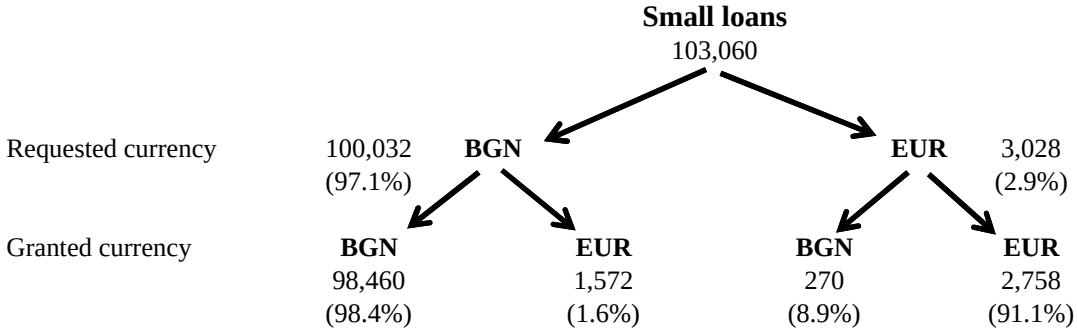
	Full sample	Small loans	Medium loans	Repeat clients
2003	69.0	42.8	26.2	48.9
2004	122.9	77.6	45.3	96.1
2005	188.7	121.3	67.4	144.9
2006	221.5	152.1	69.4	161.0
2007	212.0	152.1	59.8	117.1
Total	814.0	546.0	268.0	568.0

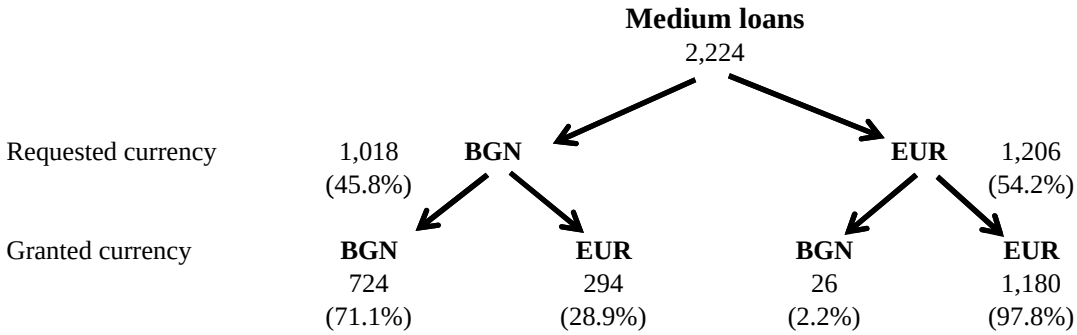
Panel C. Share of loan volume disbursed in EUR (%)

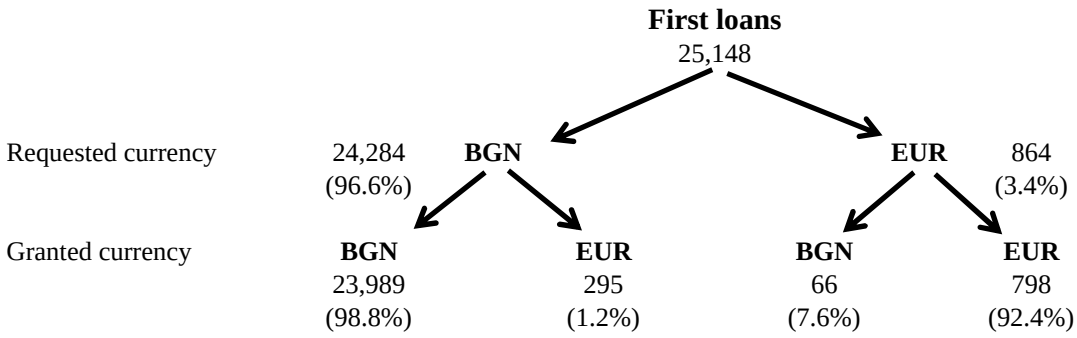
	Full sample	Small loans	Medium loans	Repeat clients
2003	43.92	23.86	76.77	44.57
2004	42.12	21.09	78.13	41.86
2005	37.65	16.35	76.01	36.94
2006	34.34	15.45	75.78	37.43
2007	33.70	19.01	71.04	42.62
Total	36.93	17.54	75.27	39.75

Figure 1. Requested vs. granted loan currency

This figure displays frequencies of requested and granted loan currencies for the following subsamples: S*mall loans* - all loans with amounts up to 50,000 EUR; *Medium loans* - all loans with loan amounts over 50,000 EUR; *First loans* - first loans of repeat clienst only; *Later loans* - all loans of repeat clienst except their first loan.







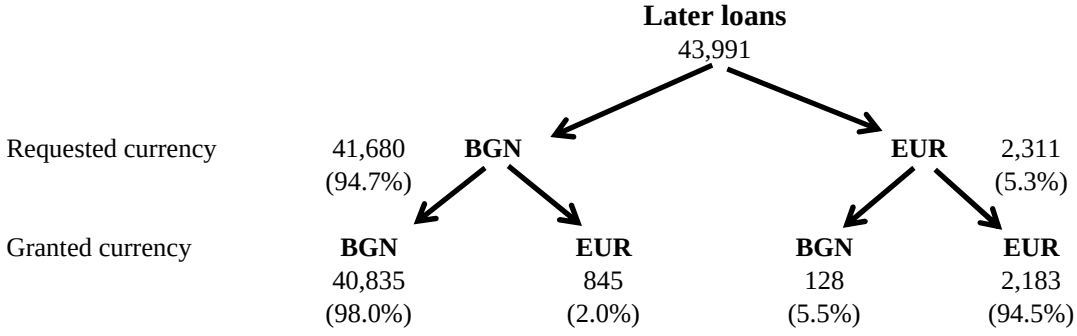


Table 3. Descriptive statistics

This table reports summary statistics for all explanatory variables. See Table 1 for definitions and sources of the variables. For all log-transformed variables the statistics are calculated by using the original values.

Panel A. Firm- and loan characteristics

	N	Mean	Minimum	Maximum
Firm characteristics				
EUR account	105,284	0.01	0	1
Disposable income	105,284	852	0	1,154,455
Leverage	105,284	0.15	0	1
Sole proprietorship	105,284	0.90	0	1
Bank relationship	105,284	9.86	0	71
Assets	105,284	57,529	2	12,835,983
Age	105,284	8.45	0	107
Loan application				
Requested amount	105,284	8,678	51	1,700,000
Requested maturity	105,284	32	1	240
Fixed capital loan	105,284	1	0	1
Loan granted				
Amount	105,284	7,731	61	1,000,000
Maturity	105,284	27.76	1	240
Annuity loan	105,284	0.74	0	1
Collateral	105,284	0.33	0	1
Interest rate	105,247	14.66	5.75	19.88

Panel B. Macreconomic conditions and bank funding

	2003	2004	2005	2006	2007
Macroeconomic conditions					
Interest differential	1.57	1.64	1.46	0.68	0.33
EU announcement	0.00	0.00	0.00	0.25	1.00
Inflation volatility	1.50	1.07	0.61	0.99	0.81
Spread differential	0.21	-0.13	-0.14	0.57	0.87
Foreign currency loans	0.55	0.61	0.67	0.64	0.65
Bank funding					
EUR liabilities / Total liabilities	0.27	0.43	0.42	0.44	0.37
EUR debt / EUR liabilities	0.79	0.75	0.68	0.64	0.39

Panel C. Pairwise correlations

	EUR account	Disposable income	Leverage	Sole proprietorship	Bank relationship	Assets	Age	Requested amount	Requested maturity	Fixed capital loan	Amount	Maturity	Annuity loan	Collateral	Interest rate
EUR account	1.00														
Disposable income	.00	1.00													
Leverage	-.01	.09	1.00												
Sole proprietorship	.01	-.18	-.14	1.00											
Bank relationship	.08	.07	.17	-.10	1.00										
Assets	.02	.53	.13	-.35	.14	1.00									
Age	.01	.02	-.03	.07	.21	.07	1.00								
Requested amount	.03	.31	.11	-.34	.12	.57	.03	1.00							
Requested maturity	.01	.00	.10	-.03	.00	.04	-.01	.22	1.00						
Fixed capital loan	.01	-.04	.00	.03	-.06	-.02	.00	.06	.37	1.00					
Amount	.03	.32	.11	-.36	.13	.58	.04	.90	.21	.06	1.00				
Maturity	.02	.01	.12	-.05	.07	.06	.02	.23	.83	.39	.25	1.00			
Annuity loan	.00	-.04	-.09	.18	-.09	-.09	-.07	-.07	-.11	-.04	-.06	-.10	1.00		
Collateral	.01	.09	.00	-.19	-.03	.17	.00	.20	-.04	-.01	.22	-.01	.24	1.00	
Interest rate	-.05	-.15	-.18	.34	-.27	-.31	-.09	-.32	-.30	-.10	-.34	-.34	.40	.25	1.00

	Interest differential	EU announcement	Inflation volatility	Spread differential	Foreign currency loans	EUR liabilities / Total liabilities	EUR debt / EUR liabilities
Interest differential	1.00						
EU announcement	-.74	1.00					
Inflation volatility	.12	-.13	1.00				
Spread differential	.93	-.67	-.14	1.00			
Foreign currency loans	-.30	.21	-.91	-.03	1.00		
EUR / Total liabilities	-.11	-.05	-.61	.14	.73	1.00	
EUR debt / liabilities	.78	-.86	.44	.64	-.52	-.09	1.00

Table 4. Univariate tests

This table reports univariate tests for our explanatory variables. Columns (1,2,4,5,7,8) report subsample means fore each variable. For all log-transformed variables the statistics are calculated by using the original values. Columns (3,6,9) report the results of two-sided T-tests. *, **, and *** indicate significance at the 10%, 5%, and 1% levels, respectively. See Table 1 for definitions and sources of all variables.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Requested currency	BGN	EUR		BGN			EUR		
Granted currency				BGN	EUR		BGN	EUR	
Observations	101,050	4,234		99,184	1,866		296	3,928	
Firm characteristics									
EUR account	0.01	0.02	***	0.01	0.02	***	0.02	0.02	
Disposable income	690	4,722	***	649	2,857	***	2,284	4,905	*
Leverage	0.15	0.22	***	0.14	0.22	***	0.19	0.22	***
Sole proprietorship	0.91	0.46	***	0.92	0.54	***	0.65	0.44	***
Bank relationship	9.56	17.22	***	9.47	14.20	***	13.77	17.48	***
Assets	43,580	390,439	***	40,197	223,398	***	193,155	405,268	***
Age	8.42	9.19	***	8.41	8.98	***	8.80	9.22	
Loan application									
Requested amount	6,323	64,881	***	5,702	39,310	***	27,896	67,661	***
Requested maturity	31.08	50.92	***	30.64	54.39	***	39.96	51.75	***
Fixed capital loan	0.51	0.69	***	0.50	0.74	***	0.46	0.70	***
Macroeconomic conditions									
Interest differential	1.02	1.09	***	1.02	0.74	***	0.98	1.10	**
EU announcement	0.31	0.26	***	0.31	0.59	***	0.31	0.26	*
Inflation volatility	0.93	0.94	**	0.93	0.90	***	0.93	0.94	
Spread differential	0.34	0.28	***	0.33	0.55	***	0.37	0.27	***
Foreign currency loans	0.63	0.63	***	0.63	0.64	***	0.64	0.63	
Bank funding									
EUR / Total liabilities	0.40	0.40		0.40	0.39	***	0.40	0.40	
EUR debt / EUR liabilities	0.63	0.65	***	0.63	0.55	***	0.63	0.65	**

Table 5. Foreign currency loan demand

The dependent variable *EUR requested* equals one if the firm requested a EUR loan and equals zero otherwise. All explanatory variables are defined in Table 1. Column (1) reports marginal effects from a logit estimation. All other columns report OLS estimates. Standard errors are reported in brackets and account for clustering at the branch-industry level. ***, **, * denote significance at the 0.01, 0.05 and 0.10-level.

	(1)	(2)	(3)	(5)	(6)
		All clients		Repeat clients	
	Main effects only	Including interaction terms with *Medium loan*		Including interaction terms with *Later loan*	
Coefficients		Main effects	Interactions	Main effects	Interactions
EUR account	0.009***	0.056***	-0.016	0.057***	-0.02
	[0.003]	[0.008]	[0.074]	[0.018]	[0.018]
Disposable income	-0.001***	-0.005***	-0.032***	-0.004***	-0.001
	[0.000]	[0.001]	[0.010]	[0.001]	[0.001]
Leverage	-0.002***	0	-0.029	0.004	-0.002
	[0.001]	[0.004]	[0.051]	[0.007]	[0.007]
Sole proprietorship	-0.003***	-0.078***	0.109***	-0.117***	-0.006
	[0.001]	[0.006]	[0.027]	[0.005]	[0.005]
Bank relationship	0.000***	0.000***	0.002***	0.001***	0
	[0.000]	[0.000]	[0.001]	[0.000]	[0.000]
Assets	0.003***	0.010***	0.037***	0.009***	0.008***
	[0.000]	[0.002]	[0.009]	[0.001]	[0.001]
Age	0	0.005***	-0.064***		
	[0.000]	[0.001]	[0.021]		
Requested amount	0.007***	0.034***	0.138***	0.041***	0.004*
	[0.000]	[0.004]	[0.016]	[0.002]	[0.002]
Requested maturity	0.002***	0.005*	0.058***	0.006***	0.019***
	[0.000]	[0.003]	[0.015]	[0.002]	[0.003]
Fixed capital loan	0.004***	0.010***	0.246***	0.010***	0.010***
	[0.000]	[0.002]	[0.028]	[0.002]	[0.003]
Interest differential	0.003***	0.016***	0.017	0.010***	0.011***
	[0.000]	[0.002]	[0.029]	[0.003]	[0.004]
EU announcement	-0.001**	-0.004	-0.048	0.005	-0.007
	[0.000]	[0.003]	[0.030]	[0.005]	[0.006]
Inflation volatility	0.003***	0.007*	-0.007	-0.008	0.006
	[0.001]	[0.004]	[0.062]	[0.009]	[0.011]
Foreign currency loans	-0.01	-0.169***	-0.037	-0.227***	-0.125
	[0.008]	[0.035]	[0.604]	[0.072]	[0.092]
Medium loan		-1.747***			
		[0.466]			
Later loan				-0.108	
				[0.070]	
Observations	105108		105,284		69,139
Method	Logit		OLS		OLS
R^2 (pseudo/adjusted /overall)	.455		0.256		0.222
Branch fixed effects	yes		yes		yes
Industry fixed effects	yes		yes		yes
Firm random effects	no		no		yes

Table 6. Foreign currency loan supply

The dependent variable *EUR granted* equals one if the firm received a EUR loan and equals zero otherwise. All explanatory variables are defined in Table 1. Columns (1) and (2) report marginal effects from logit estimations. Columns (3-4) and (5-6) report OLS estimates from single OLS regressions. Standard errors are reported in brackets and account for clustering at the industry-branch level. ***, **, * denote significance at the 0.01, 0.05 and 0.10-level.

Panel A. Small and medium loans

	(1)	(2)	(3)	(4)	(5)	(6)
	All clients				Repeat clients	
	EUR requested	BGN requested	Incl. interaction terms with *BGN requested*		Incl. interaction terms with *BGN requested*	
Coefficients			Main effects	Interactions	Main effects	Interactions
EUR account	0.007	0.003***	0.009	0.017	0.008	0.006
	[0.014]	[0.001]	[0.023]	[0.025]	[0.016]	[0.017]
Disposable income	-0.002	0.000*	-0.001	0.001	0.001	0
	[0.002]	[0.000]	[0.003]	[0.003]	[0.002]	[0.002]
Leverage	-0.01	0	-0.024	0.028*	-0.027**	0.031**
	[0.012]	[0.000]	[0.017]	[0.017]	[0.013]	[0.013]
Sole proprietorship	-0.010**	-0.001**	-0.020***	-0.025***	-0.021***	-0.028***
	[0.005]	[0.000]	[0.007]	[0.007]	[0.005]	[0.006]
Bank relationship	0	0	0.001***	-0.001**	0	0
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Assets	0.018***	0.001***	0.030***	-0.026***	0.028***	-0.023***
	[0.003]	[0.000]	[0.005]	[0.005]	[0.003]	[0.003]
Age	-0.003	0	-0.005	0.007		
	[0.003]	[0.000]	[0.007]	[0.007]		
Requested amount	0.012***	0.002***	0.014***	0.007	0.006*	0.013***
	[0.003]	[0.000]	[0.005]	[0.004]	[0.003]	[0.003]
Requested maturity	0.005	0.002***	0.01	-0.001	0.020***	-0.008*
	[0.004]	[0.000]	[0.007]	[0.007]	[0.004]	[0.004]
Fixed capital loan	0.050***	0.002***	0.070***	-0.062***	0.056***	-0.047***
	[0.009]	[0.000]	[0.010]	[0.010]	[0.006]	[0.006]
Spread differential	-0.032***	0	-0.047***	0.042***	-0.053***	0.047***
	[0.010]	[0.000]	[0.012]	[0.012]	[0.009]	[0.009]
EU announcement	0.01	0.003***	0.01	0.006	0.002	0.013
	[0.012]	[0.001]	[0.024]	[0.024]	[0.012]	[0.013]
Inflation volatility	0.01	-0.001**	0.024	-0.039	0.022	-0.033*
	[0.016]	[0.001]	[0.029]	[0.029]	[0.019]	[0.020]
Foreign currency loans	-0.221	-0.036***	-0.136	-0.189	-0.374*	0.052
	[0.181]	[0.005]	[0.296]	[0.291]	[0.193]	[0.198]
EUR liabilities / Total liabilities	0.065	0.007***	0.011	0.008	0.217***	-0.190**
	[0.093]	[0.002]	[0.133]	[0.132]	[0.074]	[0.075]
EUR debt / EUR liabilities	-0.013	-0.002	0.024	-0.041	-0.092	0.044
	[0.071]	[0.002]	[0.111]	[0.103]	[0.058]	[0.060]
BGN requested			-0.387**		-0.589***	
			[0.195]		[0.140]	
Observations	4222	101050		105,284		69,139
Method	Logit	Logit		OLS		OLS
R^2 (pseudo / adjusted / overall)	0.191	0.408		0.649		0.693
Branch fixed effects	yes	yes		yes		yes
Industry fixed effects	yes	yes		yes		yes
Firm random effects	no	no		no		yes

Panel B. Medium loans only

	(1)	(2)	(3)	(4)	(5)	(6)
	All clients				Repeat clients	
	EUR requested	BGN requested	Incl. interaction terms with *BGN requested*		Incl. interaction terms with *BGN requested*	
Coefficients			Main effects	Interactions	Main effects	Interactions
EUR account		0.064	0.013	0.043	-0.009	0.023
		[0.111]	[0.015]	[0.068]	[0.068]	[0.100]
Disposable income	-0.001	0.02	-0.005	0.024*	-0.005	0.037***
	[0.001]	[0.019]	[0.005]	[0.014]	[0.010]	[0.013]
Leverage	-0.004	0.014	-0.037	0.063	-0.055	0.072
	[0.005]	[0.068]	[0.026]	[0.055]	[0.049]	[0.069]
Sole proprietorship	0.002	-0.001	0.007	-0.006	-0.015	-0.003
	[0.002]	[0.035]	[0.009]	[0.033]	[0.023]	[0.033]
Bank relationship	0.000**	0.002**	0.000*	0.001	0.001	0
	[0.000]	[0.001]	[0.000]	[0.001]	[0.001]	[0.001]
Assets	0.001	0.022	0.007	0.01	0.001	0.013
	[0.001]	[0.021]	[0.006]	[0.013]	[0.012]	[0.016]
Age	-0.003**	-0.03	-0.01	-0.01		
	[0.002]	[0.044]	[0.007]	[0.038]		
Requested amount	0.003*	0.046	0.006	0.046*	0.011	0.013
	[0.002]	[0.029]	[0.009]	[0.027]	[0.015]	[0.024]
Requested maturity	-0.002	0.113***	-0.006	0.098***	-0.002	0.107***
	[0.002]	[0.020]	[0.007]	[0.020]	[0.016]	[0.023]
Fixed capital loan	0.080**	0.450***	0.077***	0.341***	0.097***	0.307***
	[0.032]	[0.044]	[0.019]	[0.044]	[0.026]	[0.038]
Spread differential	-0.007	-0.013	-0.025	0	-0.041	-0.002
	[0.006]	[0.042]	[0.016]	[0.039]	[0.035]	[0.051]
EU announcement	-0.004	0.185*	-0.017	0.144*	-0.048	0.132*
	[0.007]	[0.111]	[0.027]	[0.083]	[0.046]	[0.069]
Inflation volatility	-0.006	0.054	-0.015	0.083	0.006	0.016
	[0.009]	[0.148]	[0.035]	[0.140]	[0.075]	[0.111]
Foreign currency loans	-0.015	-0.904	-0.174	-0.552	-0.289	-1.535
	[0.084]	[1.391]	[0.278]	[1.276]	[0.753]	[1.138]
EUR liabilities / Total liabilities	0.024	0.605	0.136	0.503	0.177	0.867**
	[0.036]	[0.576]	[0.141]	[0.422]	[0.285]	[0.427]
EUR debt / EUR liabilities	-0.009	0.24	-0.063	0.184	-0.217	-0.042
	[0.030]	[0.481]	[0.127]	[0.403]	[0.220]	[0.325]
BGN requested			-2.109**		-1.179	
			[0.886]		[0.812]	
Observations	935	1014		2224		1777
Method	Logit	Logit		OLS		OLS
R^2 (pseudo / adjusted / overall)	.295	0.331		0.662		0.686
Branch fixed effects	yes	yes		yes		yes
Industry fixed effects	yes	yes		yes		yes
Firm random effects	no	no		no		yes

Table 7. Interest rate on medium loans in EUR

This table reports estimations for the sample of medium loans in EUR only. The dependent variable *Interest rate* is the nominal interest rate charged on the loan at disbursment. All explanatory variables are defined in Table 1. Standard errors are reported in brackets and account for clustering at the branch-industry level. ***, **, * denote significance at the 0.01, 0.05 and 0.10-level.

	(1)	(2)	(3)	(4)
	Full sample		Repeat clients	
EUR account	-0.548**	-0.542**	-0.315	-0.302
	[0.210]	[0.210]	[0.228]	[0.228]
Disposable income	-0.091***	-0.090***	-0.085**	-0.083**
	[0.031]	[0.031]	[0.035]	[0.035]
Leverage	-0.631***	-0.633***	-0.679***	-0.684***
	[0.166]	[0.166]	[0.173]	[0.173]
Sole proprietorship	0.286***	0.286***	0.289***	0.287***
	[0.055]	[0.055]	[0.085]	[0.085]
Bank relationship	-0.004*	-0.004*	-0.006**	-0.005**
	[0.002]	[0.002]	[0.002]	[0.002]
Assets	-0.112**	-0.112**	-0.120***	-0.120***
	[0.055]	[0.055]	[0.040]	[0.040]
Age	0.073	0.074		
	[0.055]	[0.055]		
Amount	-0.322***	-0.323***	-0.268***	-0.270***
	[0.064]	[0.065]	[0.057]	[0.057]
Maturity	0.221***	0.222***	0.182***	0.186***
	[0.069]	[0.069]	[0.056]	[0.056]
Annuity loan	0.044	0.047	-0.019	-0.014
	[0.191]	[0.193]	[0.139]	[0.139]
Collateral	-0.065	-0.071	-0.229	-0.226
	[0.157]	[0.157]	[0.366]	[0.366]
BGN requested	0.181***	0.282**	0.136*	0.266*
	[0.061]	[0.112]	[0.074]	[0.137]
BGN requested Interest differential*		-0.104		-0.132
		[0.092]		[0.116]
Constant	17.411***	17.431***	17.282***	17.285***
	[0.581]	[0.572]	[0.930]	[0.930]
Observations	1473	1473	1168	1168
Method	OLS	OLS	OLS	OLS
R^2 (adjusted / overall)	0.45	0.45	0.463	0.463
Branch fixed effects	yes	yes	yes	yes
Industry fixed effects	yes	yes	yes	yes
Quarter fixed effects	yes	yes	yes	yes
Firm random effects	no	no	yes	yes